

**AMENDMENTS TO THE CLAIMS**

Claims 1-13 (cancelled).

Claim 14 (currently amended): A method of controlling a catalytic combustion system comprising an air supply, a flame burner, a fuel injector positioned downstream of the flame burner and a catalyst positioned downstream of the fuel injector, a flow path containing a valve that directs a portion of the airflow to bypass the catalyst, wherein a portion of the fuel combusts within the catalyst and a remainder of the fuel combusts in the region downstream of the catalyst, comprising:

determining the adiabatic combustion temperature at the catalyst inlet;

measuring [the] a load on a turbine downstream of the catalyst;

calculating full load on the turbine downstream of the catalyst;

adjusting the airflow that bypasses the catalyst to maintain the adiabatic combustion temperature at the catalyst inlet based upon a predetermined schedule that relates the i) adiabatic combustion temperature at the catalyst inlet to ii) the difference between the measured load and the calculated full load.

Claim 15 (original): The method of claim 14, wherein the adiabatic temperature is determined by monitoring a) the airflow through the combustor, b) the fuel flow to the combustor and c) the temperature of the gas mixture entering the combustor.

Claim 16 (original): The method of claim 15, wherein the airflow through the combustor is determined by measuring the airflow through the compressor, multiplying by the fraction of air flowing to the combustor and subtracting the airflow through the bypass.

Claim 17 (original): The method of claim 16, wherein the airflow through the compressor is determined by measuring the pressure drop at the compressor inlet bell mouth.

Claim 18 (original): The method of claim 14, wherein the airflow through the bypass is determined by a flow measuring device located in the bypass flow path.

Claim 19 (original): The method of claim 18, wherein the flow measuring device consists of a restriction to the flow and a sensor to measure pressure drop across the resistance.

Claim 20 (original): The method of claim 14, further comprising a power turbine downstream of the catalyst and a generator connected to the power turbine wherein the measured load is the output of the generator.

Claim 21 (original): The method of claim 20, wherein the difference between the load and the calculated full load is determined from the turbine compressor discharge pressure, and exhaust gas temperature.

Claim 22 (original): The method of claim 14, wherein the catalyst is controlled via a schedule versus fuel air ratio (at the catalyst inlet) or  $T_{ad}$  (adiabatic combustion temperature) or EGT-delta (difference between calculated exhaust gas temperature at full load and measured exhaust gas temperature) in combination with a bypass and bleed.

Claims 23-45 (cancelled).

Claim 46 (previously presented): The method of claim 14, wherein measuring the load includes measuring the exhaust gas temperature, and calculating the full load includes calculating the exhaust gas temperature at full load.

Claim 47 (previously presented): The method of claim 14, wherein the exhaust gas temperature is measured by a thermocouple installed in the exhaust stream.

Claim 48 (previously presented): The method of claim 14, wherein measuring the load includes measuring at least one thermodynamic combustion system parameter associated with the

load, and calculating the full load includes calculating the at least one thermodynamic combustion system parameter associated with the load at full load.